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CIPWO is dedicated to the education and training of its members in order to ensure safe working conditions and to protect the environmental quality of East Central Illinois.

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## Gadgets and Gizmos

submitted by Joe McKenzie, Superintendent - Mattoon, IL

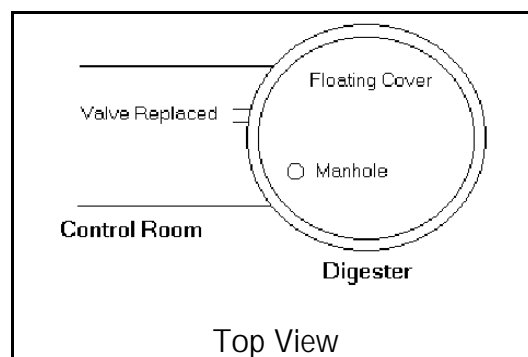
### ⚡ The Problem

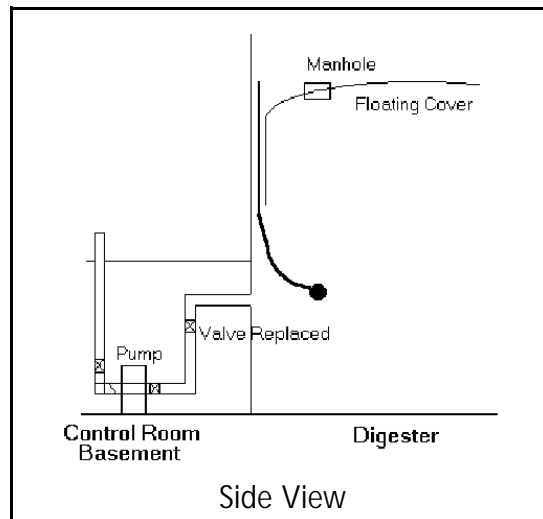
A few years ago, a valve became inoperable on the suction side of the sludge circulation pump in the anaerobic digester. It was impossible to isolate this valve for repairs. It appeared that the only way to change or repair this valve was to take sludge out of the digester.

Of course this situation surfaced during a time of the year when land application was nearly impossible. We had a number of drying beds available, but not enough room for the more than 350,000 gallons of sludge that needed to be removed. However, operating for an extended period without the use of this valve was not a desirable alternative. We determined that since removing the sludge was impossible we needed to devise a method to plug the pipe from inside the digester.

### ⚡ The Solution

One operator had a bowling ball he didn't use. We attached an eye bolt in one of the finger holes using a lead anchor. The ball was too big to fit between the wall and the floating cover, but it would fit through an nearby manhole on the cover. We dropped a rope between the wall and the floating cover and pushed it down to below the side of the cover. Next, we put a 2x2 board with a hook attached to the end into the manhole. We caught the rope and pulled it up through the manhole. Now, we could secure the bowling ball to the rope.





We lowered the ball into the sludge and moved it around the side of the tank to the location of the pipe we needed to plug. Next, we lowered the ball down until we were confident we were in the area of the pipe. The sludge circulation pump was then turned on and we could feel the ball being pulled. Tugging on the rope indicated it was snug against what we hoped was the pipe we needed to replace the valve.

We shut the pump off and drained the pipe by removing the inspection plate on the pump very slowly. It appeared to be sealed off. Pulling on the rope indicated the ball was being held by the force of the sludge pushing it against the end of the pipe. Plant staff removed the valve while I walked the floor of the digester basement. The valve was replaced with little problem and no leaking of the digester contents.

When the job was completed we reversed flow through the pipe by pumping sludge from another tank through the pipe and the digester. That pushed the ball back into the tank. We pulled the ball back along the wall toward the manhole and fished it out. The ball was cleaned off and is kept in the maintenance building with all of our important tools.